

Syllabus for the Post of Assistant Foreman (Trainee) (Electrical)/Electrical Supervisor, T&S Grade- C

Part 1

- General English, Comprehension, verbal and non-verbal reasoning
- Logical reasoning and analytical ability
- Quantitative aptitude, Basic Numeracy (Numbers and their Relations, Orders of Magnitude, etc.) (Class X level)
- Data Interpretation (charts, graphs, tables, data sufficiency etc. Class X level)
- General awareness regarding current issues of national importance and Coal Industry

Part 2

- **Basics of Electrical Engineering:** Ohm's Law, Kirchoff's law connections in series, parallel, Power factor and its improvement, Contract demand, Maximum demand, , Energy Conservation measures, Megger, Safety devices in Electrical system, PPE, Measuring equipments used in electrical systems.
- **Power generation economics:** Load factor, Diversity factor, Billing Cycle etc. Capacitor bank, APFC, AVR etc.
- **Electrical Machineries:** Operation, maintenance and pre-commissioning test, different types of motors (AC&DC). Types of Motors and their load characteristics. Operation, maintenance and pre-commissioning test of different types of generators. Operation, maintenance and pre-commissioning tests of different types of transformers. CT,PT, Auto transformer etc. Machineries/Equipment related to renewable generating stations. Battery operated vehicles and Locomotives.
- **Electric Drives and Control:**
 - Operation maintenance of Different types of starters including AC Drives such as VFDs etc., DC Drives, soft starters etc.,
 - PLC, SCADA and DCS
- **Switchgear and protective devices:** Operation maintenance, pre-commissioning tests of different types of circuit breakers, different types of protective schemes/protective devices and their operation maintenance and relay co-ordination
- **Earthing system:** Requirements, types of earthing, maintenance, chemical earthing and relevant provisions of IS - 3043
- **Neutral system of power supply:**

- Solid neutral earthing, restricted neutral earthing, isolated neutral earthing, advantages /disadvantages
- Provisions of the Regulation for suitably designed restricted neutral system of power supply including neutral-ground monitoring protection system.
- **Design and layout of sub-station, Safety in sub-station, switchyard and switchboards:**
 - Safe working clearance.
 - Guarding of live apparatus.
 - Operation and maintenance of circuit breakers, isolators, arresters, SPD, instrument transformers, storage tanks etc.,
 - Operation and Maintenance of substations and generating stations including maintenance of storage battery and related auxiliaries.
- **Operation and maintenance of substations and generating stations including maintenance of storage battery and related auxiliaries**
- **Operation, maintenance of overhead lines and underground cables Safety measures in over headlines**
 - Types of stays, its markings, grouting, stay insulator, binding etc.,
 - Types of guarding and clearances, earth/neutral wire, anti- climbing devices, and their erection
 - Selection and fixing of control devices viz. Linked switches, fuses, isolators, earthing switches and lightning arrestors/surge diverters etc.
 - Cables and conductors, their classification, construction, insulation types, laying, mining type cables and the related standards, cable jointing techniques, terminations and junction boxes
- **General safety:** Procedure for obtaining permission to work for. carrying out operations and maintenance of electrical equipment (permit to work as per IS:5216). Safety in electrical workshop, Firefighting equipment, their type, use and periodical maintenance, indicators, recorders etc., First aid training, resuscitation of persons suffering from electric shock etc.,Various Lightning protections.
- **Legislation/statutes as amended from time to time:**
 - Provisions of Central Electricity Authority (Measures relating to safety and electric supply), Regulations 2023
 - Provisions of Electricity Act,2003
 - NBC 2016 with updates
- **On-Site emergency management plan in case of contingency related to electricity:**
 - Emergency response procedure including response to off-site emergency management plan and crisis and disaster management plan